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reflected credit and honour on them, would also reflect lustre and renown on the country to which they belonged. With that opinion no one can disagree. Captain Osborn is far too unselfish a man, far too cosmopolitan in his feelings, to look with disfavour or jealousy on any expedition because the particular route to be adopted did not emanate especially from himself. But if an expedition were fitted out to explore the Arctic Seas to-morrow, and were placed at his (Capt. Richards') disposal, he would go from Spitzbergen most decidedly, and would make that his depôt and base of operations. In conclusion, he would only say that he had read Dr. Petermann's papers very attentively, and had never seen any views more clearly expressed, or defended by arguments more logical and convincing.

The second Paper was—

2. *An Account of the Mackenzie River District.* By R. MACFARLANE, Esq., of Fort Anderson, on the Mackenzie.

Communicated by SIR JOHN RICHARDSON, R.N., M.D., C.B., F.R.S., F.R.G.S.

THE banks of the Anderson at Fort Anderson, and for some distance below, are tolerably well wooded, pine (*i.e.* larch), juniper, birch, and willow being the principal trees, though the three last, especially juniper and birch, are scarce, as well as stunted in growth. Farther on, the wood is chiefly pine and willow, and is confined to the immediate banks of the river, while still lower down the country is entirely destitute of that article. In general, the banks are composed of clay, mud, gravel, shale, and probably also of sand and limestones. They are at first high and sloping, though the immediate ones are frequently low and flat. The timber required for this establishment had to be rafted down some 60 or more miles; there being no wood of sufficient size procurable in any quantity in this vicinity.

Having made a journey in February, 1863, between this and the supposed outlet of the Anderson, I then estimated the distance at fully 120 miles. We followed the river for the most part, and also made several long portages, which shortened the distance considerably. While in charge of Fort Good Hope, previously to the establishment of this place, I made several winter journeys to the Esquimaux, at the first group of houses near the outlet of this river; but as the weather during our stay was always blowing strong and drifting hard, I really could not say, from personal observation, that I had actually reached the coast. I believe, however, that I did, as the Esquimaux assured me of the fact. I need not describe their houses to you who, have seen so many of them; but I may mention that I found them (in January and February) very warm and comfortable. A long and low (covered) corridor, built of snow, shelters

the entrance, which is from below, by means of a hole in the floor (wooden) of the house. This door is closed by a hatch when the inmates retire for the night. Light is admitted by two or more slabs of clear ice, placed in the nearly flat roof of the house. The Esquimaux sleep naked upon the benches built along the sides of the apartment, with a deerskin underneath them and another as a coverlet. When we visited these people, their food consisted of fresh venison (secured in the previous autumn), dried fish, and oil, though the latter article was but sparingly used. During the severity of winter the lamps are kept constantly burning day and night; and they also cook their meat in kettles hung over them, but with an increased light for the occasion. Although I have frequently seen the Esquimaux eat raw fish, and occasionally also raw meat, I am of opinion that they like to have their food well cooked, and that they subsist principally upon food thus prepared. By the end of November most of them have left the river to proceed to their winter houses on the coast. These are nearly all situated to the eastward of the Anderson outlet; before leaving, however, many of them make large *caches* of deer's meat secured in the ice upon the river, against their return to the same in the following April, after which they live on deer, &c., as these animals begin to go north in May. When the ice goes off, the men are employed hunting the reindeer on the slopes and summits of the river banks, generally above their lodges. On killing an animal its owner drags it as it falls into the river, and then lets it drift below, so that on its reaching the lodges it may be taken possession of for the benefit of the party whose mark (an arrow inserted into the carcase) it carries. Later in the season, but especially in the autumn, the deer are killed by being speared while in the act of swimming across the river; in this way, I believe, an expert canoe-man will spear as many as 50 animals at one time.

In 1857 I examined this river for a considerable distance, and found it better wooded, especially above the outlet of its principal feeder (Lockart River, which joins the Anderson 50 miles s. of this); the banks are there also lower, and the appearance of the country different. I observed strata of clay, gravel, shales—more or less friable—limestone, sandstone, and in one or two exposures near the most easterly course of the river the rock was granite. Numerous rapids occurred, and the river was found much contracted in size. I also remarked that the rapids encountered were more frequent and comparatively formidable where the river assumed a southerly or south-westerly direction. Thin seams of lignite coal were observed in the upper banks, and this or a highly bituminous shale

likewise occurs in strata on the banks of the Lockart River, together with lime and sand stones, and friable shale. I shall next winter send you full extracts from the report of that voyage. The fossils then collected got mixed together, and were afterwards unfortunately lost; but as I am now, however, when opportunity offers, on the look-out for specimens for the Smithsonian Institution, I suppose that by and by I will be enabled to contribute some material towards the elucidation of the geological structure of this region.

Our means of communication betwixt this and Fort Good Hope are, in fall, by canoe, and in winter by sleighs. With our canoes we first descend the Mackenzie for 15 or 18 miles; then make a portage of equal length to Loon Lake (a sheet of water about 12 miles in length, and situated 25 miles N. of Good Hope), after which we pass through many small lakes and over numerous portages. We also follow four lakes, three of them larger than the Loon, and the fourth nearly equal in size, all which brings us "half-way" on our journey. From there, however, we have to make a portage of 30 miles to the Lockhart, which is descended with difficulty, owing to the lowness of the water at that period of the season. In winter we follow the same route except along the course of the Lockhart, to Loon Lake, where we strike straight for the mouth of Ifare Indian River, just below Good Hope.

Our transport business is performed chiefly during winter, easily, economically, and efficiently, and the returns (now large and valuable) thus get to the London market as early even as those of Factory, one year earlier than those of Peel's River, and two years before those of the Yoncon. The post pays very well already; the Esquimaux are rapidly becoming excellent fur-hunters. They are very fond of tobacco, the smoke of which they invariably swallow, though at the Fort they sometimes smoke like an Indian; they use pipes of their own manufacture. They are also acquiring a taste for articles of clothing and other necessities. I treat them exactly as I do Indians, and have had no reason to regret having done so; they conduct themselves in a very peaceable manner when they visit us during open water, or upon ice, and we seldom have anything stolen from us. Even the turbulent fellows from the Mackenzie River are remarkable for their quiet and civil behaviour when they visit Peel's River. I find that the Esquimaux have in many respects improved since I first became acquainted with them in 1857. We sell them guns and ammunition, and, in fact, everything they ask for; the articles in most demand, however, are tobacco, guns, ammunition, kettles, steel traps, wolverines (price, 1 silver fox each), knives,

files, blankets, &c. The flint-and-steel has now almost superseded the old "fire-producer," and the gun is also rapidly superseding the bow. We employ Fort hunters, from a small party of Batârd Loucheux belonging to Fort Good Hope, who have always resided in this quarter. As deer are numerous in the fall and spring we are never out of provisions; the river and the lakes in our vicinity yield us large supplies of fish, while the Esquimaux also bring in great quantities of fresh and dried venison during the open-water season.

From the inquiries I have made among the Esquimaux I am inclined to think that the "Esquimaux Lake" laid down on the map does not exist; in its place, however, I am told (but this information is not to be depended upon, as our interpreter does not speak, nor does he understand the language thoroughly) there is a narrow channel of the sea, its western outlet being situated near Refuge Cove, and its eastern not far from the mouth of the Anderson. Numbers of the Mackenzie River tribe (Avannie) visit us upon ice during winter, and they occupy from five to ten days on the voyage. If I am still stationed at this place when summer '65 arrives, I shall certainly go down the Anderson to the coast on a collecting expedition, and will then endeavour to find out all about the new channel, &c.

In '57, after having left the Anderson on what I conceived to be the nearest point to Fort Good Hope, and while ascending the Ross River (another of its tributaries), I had a distant view of a high hill, of an angular form, at the base of which the Beghula or Anderson was said (by my Indian *bonté*) to have its rise.

Regarding my overland trip to the Arctic Sea in June, 1862, I may state that I have little or no doubt from the course I followed, as well as from the appearance of the coast, that I really reached Franklin Bay. You, however, say that the Wilmott Horton is the only river which falls into the eastern side of Cape Bathurst, while on the map in my possession (Arrowsmith, 1860), I find two rivers (the Jardine and the Burnett) placed on it, and to the southward of the outlet of the Horton. I saw nothing of them, however, probably from not having gone quite so far north (taking it for granted that they really exist). Before reaching the Horton, on our journey through the Barren Grounds, we passed a small, partially wooded stream, which, from its course as well as from Indian information, I consider to be one of its branches. The banks of the Horton where we crossed it are remarkably high and steep, and the river is broad but shoaly, and the current pretty swift. Wood of a goodly size is tolerably abundant along some of the lower slopes, as well as near

the outlets of two small streams which here join the Horton. Formerly, I believe, Esquimaux used to come up the Horton for the purpose of hunting the reindeer—but none do so now; they and their descendants have either disappeared altogether, or removed to another quarter. We noticed some ancient traces of them here. I estimate the distance between the Horton and the coast (say 10 or 15 miles north-west of Langton Bay, the spot supposed to have been first reached) at upwards of 30 miles. About half-way we crossed another small stream (either a branch of the Horton, or the stream which was subsequently found to fall into the bottom of the supposed Langton Bay). By the route we followed, the distance between Fort Anderson and the Arctic coast cannot be much less than 120 miles, perhaps more. I am also of opinion that Fort Anderson is situated nearly due north of Fort Good Hope.

In 1863 I went over the same ground again, and also examined the coast for some distance beyond Langton Bay, into the bottom of which a small stream (before alluded to) disembogues itself. We were, on the whole, pretty successful on our expedition, made for the purpose of collecting objects of Natural History, especially in Oology. The weather, however, was rather unfavourable for operations of any kind; snow, sleet, rain, and fog, prevailed for eight out of nine days that we were upon the coast; it was also very cold. The sea was much more covered with ice than at an earlier date the previous summer. We met with no Esquimaux, nor any recent traces of them on either occasion; but ancient houses, caches, skulls, and rib-bones, &c., of the whale were pretty numerous. We also noticed some fine scented flowers along the beach.

It is my intention to make a third journey to the same quarter next month; and on my return I shall (D.V.) furnish you with full, and, I trust, correct, details thereof, as well as of the country through which we may pass. As we purpose carrying a small birch canoe along with us for visiting the island or islands lying off Langton Bay, Wilson Point, I trust that we will make a good collection of eggs. My party will consist of one Canadian, and eight or nine Indians and Esquimaux. I do not expect to be absent much more than one month.

It is generally pretty cold here during the winter season. During the months of January and February, 1863, the thermometer was frequently as low as 50° and 60° below Zero of Fahr.; it was also several times down to 65° and 66°, and once actually at 70°! Notwithstanding this fearful cold, we trip all the same. I was travelling myself, accompanied by six loaded sleds, on the voyage from Good

Hope, during this severe cold. Last winter, however, was by no means so severe; the thermometer was comparatively seldom at 50° ; it was once only at 55° , and once also 60° minus. In summer it is exceedingly hot at times; but, on the whole, the situation of the post is fine and healthy.

The Esquimaux hunts consist of the different species of the fox:—blue (very rare), cross, red, silver, and white; bears, Barren Ground and Polar; beaver (a few); lynx (very few indeed); minks, martens, musquash (very numerous, but not many traded), wolves, swans, and a few musk-oxen. These animals (musk-oxen) are pretty numerous to the east and south-east of this. I never saw but one animal, however, on my before-mentioned journeys, although traces of them were not scarce. The Barren Ground Bear extends quite to the coast, and is not very scarce. I have during the last two years secured four specimens (exclusive of skins traded for the Company), which I have transmitted to the Smithsonian Institution. They will now, therefore, be enabled to ascertain if this bear be identical with the *Ursus Arctus* of Europe. I have also this spring forwarded three good specimens of the blue, and two of the white species of fox, which will probably also enable them to decide whether or not the blue be a distinct, though an allied species, or a mere variety of the *Vulpes lagopus*.

Many changes have occurred since you were last in the Mackenzie River District. The tariff has been lowered, wages of men and Indians increased; nearly all the posts have been rebuilt; ten, instead of five or six, boats now proceed to Portage La Tache for our outfits; the posts on the Pelly River and on Frances Lake abandoned; Fort Selkirk pillaged; old Fort Norman carried off, rebuilt at the mouth of Bear River, next removed to the head of Castor que debouille, and now proposed to be transferred to the site of old Fort Franklin on Great Bear Lake! Fort Rae established on Slave Lake, Fort Anderson on the Beghula. A Protestant Mission established at Fort Simpson (under Rev. W. W. Kirkly), another at Fort Yoncon (Rev. R. Macdonald), with Catholic Missions already founded, or in course of being so, at the posts of Resolution, Rae, Liard, Norman, Good Hope, and Peel's River; at the Rapid below Big Island, the Romish Bishop of the North (Monseigneur Grandin) has erected considerable buildings, and this is to be the headquarters of the Northern Missions; and nearly all the district officers are now much interested in making collections in Natural History.

On this head I may mention that the Rev. Mr. McDonald of Yon-

con last year obtained, at a place called "Kotloo" by the Indians, about 100 miles south-east of the post, "numerous animal fossils, some of the genus *Bos*, some of the *Ovibos moschatus*, and some jaw-bones with teeth of the mastodon," as he supposed.

A third Paper was the following—

3. *On the portion of the Coast of Labrador between Blanc Sablon Bay, in lat. 51° 20' N., and Cape Harrison, in lat. 55° N.* By Captain R. V. HAMILTON, R.N., late of H.M.S. *Vesuvius*.

THE coast of Labrador was rediscovered by John Cabot in 1497, having been originally discovered by the Scandinavians about the year 1000. It extends from Cape Chidleigh, in lat. 60° N., at the entrance of Hudson's Bay, to the river St. John, in lat. 50° 17' N., which forms the boundary between it and Lower Canada, and from there to Blanc Sablon Bay is under Canadian jurisdiction, the rest of the coast being under the Government of Newfoundland.

The land is for the most part composed of granitic rocks, generally bare on the summit of the hills, which rise to a height varying from 500 to 700 feet, except in the vicinity of Sandwich and Esquimaux Bays, where they rise to a height of 1400 and 1500 feet, and are never clear of snow. Where not bare, the rocks are covered with a soft springy moss to a depth of 3 or 4 feet, most fatiguing for walking over. The lower grounds near the sea (and I believe for some distance inland) are almost covered with a very dense growth of spruce-pine, almost impenetrable; and as very venomous mosquitoes, and still more venomous black flies, are in myriads during the summer, none but a fly-fisherman ever penetrates more than 5 or 6 miles into the interior during that season. In winter the numerous lakes connected to one another by streams afford an easy method for the trappers to penetrate 25 to 30 miles. From their account, the interior country is very similar to the sea-coast, but not so thickly wooded. None of the rivers are navigable for anything but boats.

Climate.—The climate of this coast, which corresponds to England in latitude, is very severe. Ice does not leave it till June, in which months frosts are not uncommon. The ponds are frozen over by the end of September, and the bays and inlets by Christmas. Patches of snow remain throughout the year in sheltered spots. In winter the sea is frozen over 20 miles from the land.

The general temperature of the sea-coast is rarely above 50° in summer, more generally 40° to 45°, the sea varying from 38° to 42°.